

In re Patent Application of:  
**WILSON ET AL**  
Serial No. 10/647,558  
Filed: 08/25/2003

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IN THE SPECIFICATION:

Please replace **the title** with the following amended title:

"Optical Laser Monitoring and Wavelength Stabilization Circuit"

Please replace paragraph [0023] with the following amended paragraph:

[0023] Referring now to FIG. 1, a circuit is shown for providing a diode laser output signal having substantially non-varying output power at a substantially non-varying output wavelength. All of the components described hereafter are preferably contained within a hermetically sealed package 3 ~~(not shown)~~, with the exception of a temperature sensor 5, which is disposed outside the package 3. Alternatively, all of the electronics may be disposed outside of a hermetically-sealed portion of the package 3. An output signal from the temperature sensor 5 is electrically coupled to components inside the hermetically sealed package 3.

Please replace paragraph [0026] with the following amended paragraph:

[0026] A second control circuit for controlling a thermal electric cooler 40 (TEC) adjacent to the diodes 14 and 16 includes a comparator 42 having its negative input tied to an output terminal 43. When the switches 19a and 19b are toggled from the position shown to position 2, such that the photodetector 16 becomes forward biased, a voltage is present at terminal 43 that is proportional to temperature sensed by the photodetector 16. A ROM 50 having its unique contents programmed during manufacture of the device,

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includes control data stored at particular addresses for controlling the TEC 40 in dependence upon the temperature sensed by the photodetector 16, and in dependence upon an ambient temperature sensed by a temperature sensor 5 outside the laser diode package 3 provided as a digital input signal at terminal 45 used to address both the ROM 50 and the power ROM 23. A gate error control signal, between gate error blocks 22 and 61, ensures that only one control loop is functional while the other is disabled. In operation, the voltage at terminal 43 and the addressed data stored in ROM 50, converted to an analog signal by a D/A converter 58, are provided to a summing circuit 60. A difference in these input voltages yields a signal, which drives a TEC driver circuit 62 coupled to the TEC 40.

Please replace paragraph [0027] with the following amended paragraph:

[0027] A novel aspect of the invention resides in the acquisition of data to be stored in the ROM 50, and the programming of the ROM 50 during test and manufacture of the wavelength stabilized laser diode 14. In order to ascertain the data set required to maintain the laser diode 14 at a constant output wavelength, the output wavelength is monitored. Once the output wavelength is at a desired output wavelength  $W_a$ , the temperature outside of the laser package 3 is raised or lowered from an initial temperature of 25.degree. C. and the output wavelength varies. The voltage of the photodiode 16 can be monitored and a binary number representing this voltage can be written into the ROM 50 or the ROM 50 contents can be varied up and down until the desired wave length is measured on a wave length meter. Typically, the values are relatively close and the 25.degree. C. values are simply increased or decreased slightly

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until the desired wavelength is obtained. This digital value is then provided to the D/A converter 58, which forces the TEC driver 62 to switch on, until the wavelength of the laser diode 14 approaches the desired wavelength  $W_d$ . Once this occurs the output signal at terminal 43 and the output signal at of the D/A 58 are compared and the difference becomes zero. The contents of the ROM 50 are acquired in this manner as the outside temperature is continually varied within a predetermined range of operating temperatures under which the device must perform. Hence, the contents of the ROM 50 are unique for each device. Alternatively, the contents could be derived through a collection of statistical data but the performance of each module would also be statistical and is loaded at production test.